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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,236	06/26/2003	Shun-ichi Ishikawa	Q76184	4220

7590 08/26/2005

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Washington, DC 20037-3213

EXAMINER
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HON, SOW FUN

ART UNIT	PAPER NUMBER
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1772

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/606,236

Applicant(s)

ISHIKAWA, SHUN-ICHI

Examiner

Sow-Fun Hon

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.  
4a) Of the above claim(s) 20 and 21 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-19 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

#### ***Rejections Withdrawn***

1. The 35 U.S.C. 112, 2<sup>nd</sup> paragraph rejection of claim 15 has been withdrawn due to Applicant's amendment dated 06/08/05.
2. The 35 U.S.C. 103 (a) rejections have been withdrawn in part due to Applicant's arguments in the remarks section dated 06/08/05 and in part due to the new rejections set forth below.

#### ***New Rejections***

##### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-4, 9-13, 15-19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/665,432.

Conflicting parent claim 1 recites a polymer composition comprising a polymer having a glass transition temperature of 120°C to 400°C, which is within the claimed range of 100°C of the base film of presently examined parent claim 1, and an organic modified layered silicate, which is a species of the inorganic layered compound of presently examined claim 10, dependent on presently examined parent claim 1. While conflicting claim 1 fails to recite that the base film has a linear thermal expansion coefficient of 40 ppm/°C or lower, because conflicting claim 4, which depends on conflicting claim 1, recites that the polymer is selected from the group consisting of polycarbonates, cycloolefin polymers, polyarylates and polyethersulfones, the same materials for the base film of presently examined claim 9, a linear thermal expansion coefficient of 40 ppm/°C or lower is expected to be inherent in the same polymer material. Conflicting claim 13, which is dependent on conflicting claim 1, recites a film consisting of the polymer composition. Conflicting claims 14-15, which depend on conflicting claim 1, recite a gas barrier film comprising the film consisting of the polymer composition, and an organic/inorganic hybrid layer wherein the organic/inorganic hybrid layer is formed on the film by the sol-gel method. Therefore, although the claims are not identical, they are not patentably distinct when considered together.

This is a provisional obviousness-type double patenting rejection.

***Claim Rejections – 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Volpe (US 5,510,147).

Volpe teaches a gas barrier film having an inorganic coating layer formed by the sol-gel method (coated polymer film, column 1, lines 5-9).

5. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Matsuo (US 5,645,923), as evidenced by Wiley (Wiley Database of Polymer Properties).

Matsuo teaches a gas barrier film having an inorganic coating layer (thin film layer, column 3, lines 15-20) and an organic-inorganic hybrid coating layer (composition containing a polymer and at least one hydrolyzate of a metal alkoxide, column 3, lines 15-25). The organic-inorganic hybrid coating layer is formed from a mixture of a hydrolyzed solution (A) of tetraethoxysilane and hydrochloric acid and a water/alcohol solution (E) of polyvinyl pyrrolidone (column 10, lines 55-60), wherein the organic-inorganic hybrid coating layer is formed from a metal alkoxide which is hydrolyzed and polymerized in solution, which is the sol-gel method, as defined by Applicant's specification (page 9, lines 10-20).

Although Matsuo fails to teach that the inorganic coating layer is formed by the sol-gel method, determination of patentability is based on the product itself even though

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product by process claims are limited by and defined by the process. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See MPEP 2112.01 [R-2].

Matsuo teaches that the inorganic coating layer and the organic-inorganic hybrid coating layer are provided on a base film (substrate film material made of polyethylene naphthalate, column 5, lines 49-56), which is transparent as defined by Applicant's specification (original claim 9). The polyethylene naphthalate material of Matsuo has a glass transition temperature of 100°C or higher, of 120°C or higher, and of 150°C or higher, as evidenced by Wiley.

Wiley teaches that polyethylene naphthalate (Table 3, last line of printout) has a glass transition temperature of 261°C, which is within the range of 100°C or higher, of 120°C or higher, and of 150°C or higher. A chemical composition and its properties are inseparable. If the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. See MPEP 2112.01. Therefore the polyethylene naphthalate material of Matsuo is also expected to have a linear thermal expansion coefficient of 40 ppm/°C or lower, or 20 ppm/°C or lower.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

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6. Claims 10-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo, as evidenced by Wiley, as applied to claims 1-9 above, and further in view of Pinnavaia (US 6,414,069).

Matsuo, as evidenced by Wiley, teaches a gas barrier film having an inorganic coating layer and an organic-inorganic hybrid coating layer formed by the sol-gel method on a transparent base film having a glass transition temperature of 100°C or higher, and a linear thermal expansion coefficient of 40 ppm/°C or lower, as described above.

Regarding claim 10, Matsuo, as evidenced by Wiley, fails to teach that the base film contains an inorganic layered compound.

Pinnavaia teaches a barrier film (column 10, lines 40-45) which contains an inorganic layered compound (column 1, lines 10-20). A polyester, polycarbonate or polyethersulfone is incorporated with the inorganic layered compound (column 15, lines 15-20), wherein the inorganic layered compound also serves as a polymer reinforcement agent (column 10, lines 43-45).

Therefore, because Pinnavaia teaches that the inorganic layered compound serves as a reinforcement agent for the polymer in a barrier film, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a base film which contains an inorganic layered compound, as the base film of Matsuo as evidenced by Wiley, in order to obtain a barrier film with the desired reinforced support, as taught by Pinnavaia.

Regarding claim 11, Pinnavaia teaches that the weight ratio of the inorganic layered compound and a resin contained in the film is between about 1/100 and 100/1 (column 14, lines 55-60), which overlaps the claimed range of 1/100 to 100/20. Therefore the barrier film of Matsuo, as evidenced by Wiley, and further in view of Pinnavaia, contains the inorganic layered compound and resin in the base film in a weight ratio within the range of 1/100 to 100/20.

Regarding claims 12-13, 15, Pinnavaia teaches that the inorganic layered compound contains an octadecylammonium ion (column 13, lines 55-60), which is an alkylammonium ion containing a long-chain alkyl group. The alkylammonium ion is an organic cation. Therefore the barrier film of Matsuo, as evidenced by Wiley, and further in view of Pinnavaia, contains the inorganic layered compound in the base film, wherein the inorganic layered compound comprises an organic cation which contains an alkylammonium ion containing a long-chain alkyl group.

Regarding claim 14, although Pinnavaia fails to disclose the claimed amount of 0.05 to 3 equivalents of organic cation, relative to the cation exchange capacity of the inorganic layered compound, because Pinnavaia teaches 63 meq of octadecylammonium cation exchanged homoionic organoclay (column 16, lines 40-45), and that the amount is according to the desired stoichiometric ratio (column 16, lines 35-38), it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have varied the amount of equivalents of organic cation, relative to the cation exchange capacity of the inorganic layered compound of Pinnavaia, to provide the desired stoichiometric ratio, in order to obtain the desired functionality



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provided by the exchange, as taught by Pinnavaia. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have varied the amount of equivalents of organic cation, relative to the cation exchange capacity of the inorganic layered compound in the base film of the barrier film of Matsuo, as evidenced by Wiley, and further in view of Pinnavaia, in order to obtain the desired functionality provided by the range of 0.05 to 3 equivalents of organic cation, relative to the cation exchange capacity of the inorganic layered compound.

7. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuo, as evidenced by Wiley, as applied to claims 1-9 above, and further in view of Stein (US 6,322,860).

Matsuo, as evidenced by Wiley, teaches a gas barrier film having an inorganic coating layer and an organic-inorganic hybrid coating layer formed by the sol-gel method on a transparent base film having a glass transition temperature of 100°C or higher, and a linear thermal expansion coefficient of 40 ppm/°C or lower, as described above. Matsuo, as evidenced by Wiley, fails to teach a display with a substrate having the gas barrier film.

Stein teaches an electronic display device (abstract) with a plastic substrate (sheet) on which are applied barrier layers (column 10, lines 1-10). These barrier layers can be multiple layers comprising sol-gel inorganic coating layers and organic-inorganic hybrid coating layers (column 10, lines 20-30). The display device can be (organic) electroluminescent or liquid crystal (column 1, lines 10-20). Stein teaches that the barrier layers reduce unwanted gas or moisture permeation (column 10, lines 1-5).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used the gas barrier film of Matsuo, as evidenced by Wiley, comprising the inorganic and/or organic-inorganic hybrid coating layers formed by the sol-gel method, as the multilayer barrier film of Stein, in order to obtain an organic electroluminescent or liquid crystal display substrate protected against unwanted gas and moisture permeation.

### ***Response to Arguments***

8. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

*S. Hon*

Sow-Fun Hon

*08/23/05*

*[Signature]*

HAROLD PYON

SUPERVISORY PATENT EXAMINER

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*8/24/05*